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GENERAL NOTES.

Members and friends of the Society are invited to aid the Committee on Publication in carrying out the work of this department. Communications of general interest will be gladly received, and may be sent to SIDNEY D. TOWNLEY, 2023 Bancroft Way, Berkeley, California.

Dr. LEWIS SWIFT has disposed of his astronomical equipment to the Pasadena and Mount Lowe Railway. The instruments are to remain on Echo Mountain, and Professor E. L. LARKIN is now director of the observatory.

The oft-recurring discussion concerning the management ot the United States Naval Observatory is again before the public. The discussion was precipitated by the publication of the report of the Superintendent of the United States Naval Observatory for the fiscal year ending June 30, 1900. In it Superintendent DAVIS takes occasion to criticise rather severely the actions and report of the Board of Visitors appointed by Secretary LONG in 1899. Replies to these criticisms have appeared as editorials and communications in *Science*, January 4th, 11th, and 18th. The discussion has now reached such a point that its continuation will be productive of very little good. A great many astronomers think the present management of the Observatory is fundamentally wrong. It is to be hoped that they will soon make a determined effort to have the Observatory reorganized, or else keep still and give the new staff a chance to show what it can do.

Volume XVIII of the *Publications of the National Observatory of the Argentine Republic* has been received recently. It is a continuation of the Southern Durchmusterung, and contains a catalogue of 149,447 stars, being all the stars down to the tenth magnitude in the zone 42° to 52° South Declination. It is a matter of congratulation that Dr. THOME, notwithstanding many difficulties, financial and others, has been able to bring the third part of this great work to completion.

At the annual public meeting of the Paris Academy of Sciences, held on December 17, 1900, the following prizes were awarded for astronomical work: The Lalande prize, to M. GIACOBINI, of Nice, for his work on comets; the Damoiseau prize, to M. J. VON HEPPERGER, for his work on the influence of the planets on comets; the Valz prize, to M. l'Abbé VERSCHAFFEL, for work done at the Abbadia Observatory; and the Janssen prize, to Professor BARNARD, for the discovery of the fifth satellite of Jupiter.

The *Astrophysical Journal* for December contains an important article, by Professor EDWIN B. FROST, on the spectroscopic and photographic work of the Yerkes Eclipse Expedition (May, 1900). The conclusions reached are summarized as follows: —

"The experience, principally of Sir NORMAN LOCKYER and Mr. J. EVERSHED, is confirmed, that useful results may be obtained, without much risk of failure, by the employment of the simple objective-prism camera.

"It is shown that the concave grating, used direct, without intervention of mirrors or lenses, will furnish sufficiently bright images of the flash spectra, and probably of the corona, for useful measurement and discussion.

"It appears that spectra photographed with such instruments just before or after totality (within about thirty seconds of the times of contact), yield quite as valuable results as those taken at the precise instants of contact.

"It is demonstrated that the stronger dark-lines of the solar spectrum are in a large proportion reversed in a narrow stratum at the base of the chromosphere, and the evidence indicates that this is equally true of the fainter lines.

"The differences in intensities of the bright and dark lines are chiefly due to an increase in the intensities of the former, especially for such elements as strontium, rather than to a decrease in the intensities of the latter.

"The chemical origin of the dark lines which are reversed is found in elements which are among those most numerously represented in the spectrum. This tends to show that the reversal is not an inherent peculiarity of special elements, but rather a phenomenon of lines in general."

Continuing the plan inaugurated last year letters were recently sent to the directors of the observatories of the Pacific Coast, asking for a statement of the work accomplished during 1900. From the answers received the following accounts have been written: —

CHABOT OBSERVATORY.—Instruction in connection with the schools of the city of Oakland has continued, as in former years, to be the chief work of this Observatory. A lecture-hall, to be used for school and general educational purposes, has recently been erected adjoining and communicating with the Observatory. The hall is about seventy-five feet long and provided with six hundred opera-chairs. Very complete arrangements have been made for heat, ventilation, and light. Arc-light and solar-projection lanterns have been provided for the use of lecturers. Considerable of Mr. BURCKHALTER'S time during 1900 was taken up in connection with the eclipse of May 28th, which he successfully observed at Siloam, Georgia. An account of his expedition, together with some reproductions of the photographs taken, may be found in No. 75 of these *Publications*.

INTERNATIONAL LATITUDE OBSERVATORY.—Latitude observations were continued at the Observatory in Ukiah without interruption during 1900. Dr. SCHLESINGER'S report of the work accomplished is as follows:—

"The programme of the International Geodetic Association for observing Variations of Latitude has been continued without modification at this station, as well as at the five others, throughout 1900. An account of the programme is to be found in No. 71 of these *Publications*. Below is given a summary of the observations made here during the year:—

"I. *Observations for Latitude proper.*—The following table shows the number of nights and the number of pairs observed in each month:—

January . . .	15 nights . . .	179 pairs
February . .	13 " . . .	168 "
March	14 " . . .	182 "
April	11 " . . .	154 "
May	18 " . . .	208 "
June	13 " . . .	169 "
July	15 " . . .	209 "
August	14 " . . .	188 "
September . .	14 " . . .	166 "
October . . .	14 " . . .	181 "
November . .	13 " . . .	123 "
December . .	14 " . . .	176 "
Totals . .	168 nights	2,103 pairs

"These numbers include 'refraction pairs' (about twenty per cent. of the total), which are not used for determining the latitude, but to detect possible anomalies in the refraction.

"II. *Observations for the control of the position of the instrument.*—This work has been much simplified by the use of the meridian-marks. These having once been set in place, the azimuths are held in excellent control. Although observations were frequently made to test the adjustment of the marks, the latter might have been assumed correct throughout the entire year without incurring any appreciable error in the latitude. Similarly, the collimation and lateral flexure have remained sensibly constant; the former varied only $0^s.10$ from its mean value during the year.

"III. *Observations for values of the level spaces.*—Nine tests were made for each of the two levels with which the zenith-telescope is provided. These tests are based upon the star observations by a method described on another page of this publication.

"IV. *Observations for micrometer value.*—Two series of observations for this purpose were executed; one on circumpolar stars near elongation, the other upon stars in the *Pleiades* whose differences of declinations have been well determined, especially by BESSEL, ELKIN, and JACOBY.

"V. *Observations for screw-errors.*—The progressive errors of the screw were determined by suspending a vertical scale at some distance from the telescope and then determining the errors of the scale and the screw simultaneously. A more detailed account of this investigation will be given later.

"A definitive reduction of the observations made at all the stations up to 31st December, 1900, is now in progress at Potsdam, and will shortly be published. A preliminary reduction, already made, gives promise of unprecedented accuracy in the determination of the path of the Earth's pole of rotation upon its surface."

LICK OBSERVATORY.—Through the "Notices from the Lick Observatory," the readers of the *Publications* are kept well informed concerning the work carried on in that institution. During the past year, in addition to the regular work of the Observatory, an eclipse expedition to Georgia was undertaken by Dr. CAMPBELL and Mr. PERRINE. These two observers were assisted by about a dozen volunteer workers, and a large programme of work was successfully carried out in the short time of totality. A general account of the expedition was printed in No. 75 of these *Publications*, and the more detailed account will be issued later by the Observatory.

Professor KEELER'S second annual report, written only a few weeks before his death, has recently been published in President WHEELER'S biennial report to the Governor of the State. The report contains, in some detail, an account of the work being carried out with the various instruments. Extracts, concerning the work with the two largest instruments, are given below. "About half the time of the 36-inch equatorial is devoted to spectroscopic determinations of the motions of stars in the line of sight, with the aid of the Mills spectrograph. This department of the scientific work of the Observatory, which is probably as important as any work that can be done at the present time with a large telescope, has been admirably systematized by Dr. CAMPBELL, who is assisted in the observations and reductions by Mr. WRIGHT. The probable error of a single determination is only about 0.25 $^{km.}$ for the best stars, a degree of accuracy which has never before been reached in such measurements. A correcting-lens, which is placed in the cone of rays from the 36-inch objective, and which changes the chromatic aberration of the telescope so as to adapt it to photographic work, has added somewhat to the accuracy and very much to the convenience of the observations. . . . For the remaining half of the time the telescope has been used for micrometric work by Mr. HUSSEY, Mr. PERRINE, and Mr. AITKEN, and occasionally by other observers. Series of observations of the satellites of *Neptune* and *Mars* have been made by Mr. HUSSEY; of the satellites of *Neptune* and *Uranus* by Mr. AITKEN. A hundred and fifty sets of measures of planetary nebulæ, for parallax, and a set of measures for determining a possible refractive effect on stars by the head of SWIFT'S comet, have been made by Mr. PERRINE. . . . . Observation with the Crossley reflector is subject to more limitations than observations with the other instrument. Work cannot be pursued on moonlight nights, in slightly foggy, or even in damp weather. Nevertheless, about seventy photographs have been made of forty different nebulæ and star-clusters, mostly with long exposures of from three to four hours each, and from the most interesting of these, positive enlargements have been made on glass. The definition of these photographs, and the amount of detail shown by them, are surprising. Many new features are shown, and some general conclusions of the highest interest have already been drawn. From one to sixteen new nebulæ have been found on nearly every plate exposed, and I have estimated that the number of new nebulæ in the sky, within reach of the Crossley reflector, may be something like 120,000."

MOUNT LOWE OBSERVATORY — Dr. SWIFT, owing to advanced age, did but little astronomical work during 1900. As stated in another place in these notes, Dr. SWIFT has disposed of his astronomical outfit, and Professor EDGAR L. LARKIN, formerly Director of the Knox College Observatory, Galesburg, Ill., is now Director of the Mount Lowe Observatory. Professor LARKIN took charge of the observatory January 1, 1901, and writes that he is now engaged in reorganizing the observatory, making necessary repairs, etc. When all of the necessary changes are made he expects to give his time to spectroscopic work, mostly upon the Sun.

NAVAL OBSERVATORY.— Mare Island.— Lieutenant GUY W. BROWN, U. S. Navy, writes that owing to many duties as a naval officer, no astronomical work other than that of maintaining the time-service of the Pacific Coast was attempted at Mare Island.

STUDENTS' OBSERVATORY.—The work at the Students' Observatory, Berkeley, is nearly all in the line of instruction, and the time of the members of the staff is given to directing and supervising the work of students rather than to research work. During the last two years a much closer relation between the Berkeley and Lick Astronomical Departments of the University has been established. It has been Professor LEUSCHNER'S ambition to build up here, in connection with the Lick Observatory, a thorough School of Astronomy. During the past year a comprehensive course of study, both undergraduate and graduate, has been outlined, and a special announcement to students is now being printed. We hope to give a more detailed account of this in the next number of these *Publications*. During the first term of 1900, the total enrollment in astronomical courses was 130, and during the second term 120. Among the special lines of work carried out during the past year, the following may be mentioned: Computation, by Professor LEUSCHNER and Miss HOBE, of the orbit of a faint asteroid discovered by Professor KEELER with the Crossley Reflector, June 28, 1900; computation of the elements of the Crossley asteroid 1899 FD, by Mr. PALMER and Mr. PHIPPS; notes on the computation of preliminary orbits (*A. N.* No. 3669) by Mr. SPRAGUE; adaptation to long intervals of VON OPPOLZERS' method of computing comet orbits from four observations, by Mr. KUNO.

UNITED STATES COAST AND GEODETIC SURVEY OBSERVATORY.— This observatory, situated in the Presidio Reservation, San Francisco, and provided with a transit and a zenith-telescope, is used as a longitude base for the determination of new stations by telegraphic time-signals and for practice of observers. Captain AUG. F. ROGERS, Assistant in Coast Survey, and in charge of the observatory, writes, however, that no new determinations were made during 1900.